

## CLAIMS

What is claimed is:

- 1           1.       A package comprising:  
2           a die including an active surface;  
3           a substrate electrically coupled with the active surface; and  
4           an interposer between the die and the substrate, wherein the interposer has a  
5           body with a first surface, an opposite second surface, and a channel passing through  
6           the body from the first surface to the second surface.
- 1           2.       The package of claim 1 wherein the channel lies in the die shadow  
2           region.
- 1           3.       The package of claim 2 wherein the channel is a vent hole to  
2           facilitate capillary flow of underfill mixture dispensed between the interposer and  
3           the substrate.
- 1           4.       The package of claim 3 wherein underfill mixture is dispensed  
2           between the interposer and the substrate, wherein a meniscus of the underfill  
3           mixture is formed within the vent hole, and the meniscus substantially prevents the  
4           underfill from exiting the first surface of the interposer.
- 1           5.       The package of claim 1 wherein the channel lies outside of a die  
2           shadow region.
- 1           6.       The package of claim 5 wherein the channel is a microchannel  
2           through which underfill is dispensed.
- 1           7.       The package of claim 1 wherein there are at least two channels  
2           formed in the interposer.

1           8.       The package of claim 7 wherein the at least two channels in the  
2 interposer includes a vent hole within a die shadow region and a microchannel that  
3 lies outside of the die shadow region, wherein underfill is dispensed into the  
4 microchannel and between the interposer and substrate.

1           9.       A packaging system comprising:  
2 a die;  
3 a substrate electrically coupled with the die;  
4 an interposer between the die and the substrate, wherein the interposer has a  
5 body with a first surface, an opposite second surface, and a channel passing through  
6 the body from the first surface to the second surface; and  
7 underfill mixture dispensed between the interposer and the substrate using  
8 capillary flow.

1           10.      The packaging system of claim 9 wherein the channel is substantially  
2 centered in the interposer.

1           11.      The packaging system of claim 9 wherein the channel is a vent hole  
2 within a die shadow region.

1           12.      The packaging system of claim 9 wherein the channel lies outside of  
2 a die shadow region.

1           13.      The packaging system of claim 12 wherein the die shadow region  
2 extends from an active surface of the die through the interposer to the second  
3 surface.

1           14.      The packaging system of claim 9 wherein there are at least two  
2 channels formed in the interposer, including a channel within a die shadow region,  
3 and a channel that lies outside of the die shadow region.

1           15.     A process comprising:  
2           forming a channel through a channel body from a first surface of an  
3           interposer through to an opposite second surface of the interposer;  
4           disposing the interposer between a die and a substrate; and  
5           dispensing underfill between the interposer and the substrate, wherein the  
6           channel is at least one of a vent hole to facilitate capillary flow of the underfill  
7           mixture, and a microchannel through which the underfill mixture is dispensed.

1           16.     The process of claim 15 wherein air escapes from between the  
2           interposer and the substrate through the vent hole as the underfill mixture is  
3           dispensed.

1           17.     The process of claim 15 wherein the vent hole is substantially  
2           centered in the interposer.

1           18.     The process of claim 15 wherein the microchannel lies outside of a  
2           die shadow region.

1           19.     The process of claim 18 further comprising positioning an underfill  
2           dispenser nozzle to the first surface of the interposer at the channel.

1           20.     The process of claim 19 further comprising positioning an underfill  
2           dispenser nozzle adjacent an outer edge of the die to dispense the underfill mixture  
3           in the channel.

1           21.     The process of claim 15 further comprising positioning the vent hole  
2           within a die shadow region, and positioning an underfill dispenser nozzle adjacent  
3           an outer edge of the die to dispense the underfill mixture through the microchannel  
4           and between the interposer and the substrate.

1           22.     The process of claim 15 further comprising dispensing the underfill  
2     mixture from a plurality of underfill mixture dispensers substantially simultaneously  
3     while allowing air to escape from between the substrate and the interposer via the  
4     vent hole.

1           23.     The process of claim 22 further comprising forming a plurality of  
2     microchannels in the interposer about the die, wherein the plurality of dispensers are  
3     positioned at the plurality of microchannels, respectively, to dispense the underfill  
4     mixture.